

Difficult decision making in the management of patients with atrial fibrillation and acute coronary syndrome or invasive cardiovascular interventions: new recommendations for daily practice

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This editorial refers to ‘Management of antithrombotic therapy in atrial fibrillation patients presenting with acute coronary syndrome and/or undergoing percutaneous coronary or valve interventions: a joint consensus document of the European Society of Cardiology Working Group on Thrombosis, European Heart Rhythm Association (EHRA), European Association of Percutaneous Cardiovascular Interventions (EAPCI) and European Association of Acute Cardiac Care (ACCA) endorsed by the Heart Rhythm Society (HRS) and Asia-Pacific Heart Rhythm Society (APHRS).’ by Lip et al., on page 3155–3179.

In a series of clinical scenarios decision making on the most appropriate treatments to be applied in an individual patient may become very difficult, in view of the risk of treatment-related adverse events that have to be balanced against the benefits that a specific medication or intervention may offer.

When a clinician has to decide on use of antithrombotic drugs in the setting of a patient affected by atrial fibrillation (AF) experiencing an acute coronary syndrome (ACS), the difficult task is avoiding thrombotic events (stroke prevention, recurrent cardiac ischaemia in an ACS setting, stent thrombosis if one is implanted) against the risk of haemorrhage when oral anticoagulant (OAC) is combined with antiplatelet therapy. This is really challenging, like the navigation between Scylla and Charybdis in the Strait of Messina, between Calabria and Sicily in Italy.¹

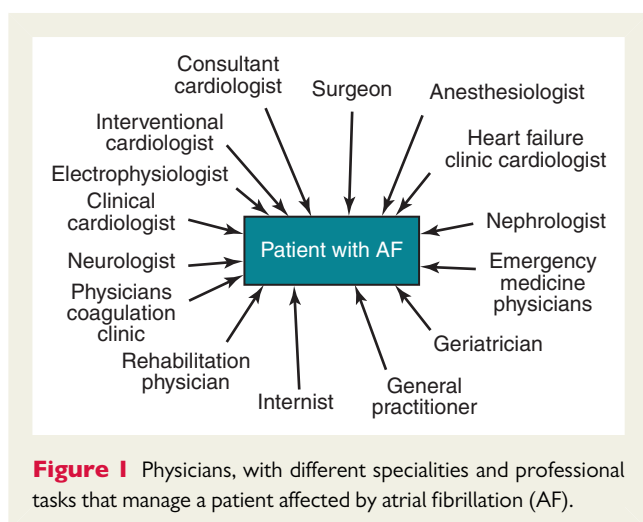
In a patient with AF the need to decide on antithrombotic therapy is common in clinical practice, whereby according to current guidelines² an indication for OACs can be present in over 80% of AF

patients; however, 30% of them having vascular disease and around 20% requiring a percutaneous cardiovascular intervention (PCI) at some stage.³ On the other hand, previously undetected AF often complicates an ACS in up to 20% of patients.⁴

Many physicians, with different specialities and professional tasks get ‘involved’ in the management of a patient affected by AF (Figure 1), looking at this patient from variable perspectives, with need to coordinate decisions and actions with some of the colleagues, in a team-work that nowadays becomes necessary in order to guarantee the highest levels of care. For all of these colleagues, decision making and patient management in the setting of patients with AF and ACS or invasive cardiovascular interventions is particularly demanding and complex.

The joint consensus document of the European Society of Cardiology (ESC) Working Group on Thrombosis, European Heart Rhythm Association, European Association of Percutaneous Cardiovascular Interventions, and European Association of Acute Cardiac Care, endorsed by Heart Rhythm Society and Asia-Pacific Heart Rhythm Society has been prepared with the aim to help decision making in this complex setting, where more frequently than in other settings cohort studies and registries contribute to generation of recommendations, in view of relative paucity of randomized clinical trials.³

Performing a PCI and managing appropriately the antithrombotic regimen is a task with the typical characteristics of ‘complex interventions’, in view of the multiple interacting components, the implications in terms of organization, of care, and the relevance and variability of outcomes. Therefore, the European consensus document has important implications in terms of organization of care



and should be an important reference for organizing networks for patient referral and patient follow-up, whereby interventional cardiologists, clinical cardiologists, electrophysiologists, and all the other physicians involved in the care of AF patients should coordinate their work, in an attempt to obtain such synergistic effects that these types of clinical scenarios may request.

In such situations, decision making has to be based on a comprehensive patient-centred and individualized approach^{5–7} whereby all the knowledge from scientific evidence, summarized in consensus guidelines and consensus documents^{2,3} has to be combined with individual clinical assessment, with the important aid of a series of user-friendly risk scores that appropriately depict the individual risk, in terms of stroke or bleeding hazards, as well as in terms of likelihood of appropriate anticoagulation use.^{8–10}

Individualization and personalization of care is actually needed, both on the side of physicians taking care of medical therapy [antiplatelet drugs, or OAC, whether non-vitamin K antagonist or vitamin K antagonist (VKA)] and on the side of interventional cardiologists (choice of access, choice of stent, etc), thus reaching an agreement also on the optimal duration of combined antithrombotic treatment.

The European consensus document³ proposes a series of specific concepts that carry important practical implications:

- (1) Non-vitamin K antagonist OACs (NOACs) and VKA can be used when an OAC is recommended;
- (2) If a VKA is used in combination with antiplatelet agents, international normalized ratio (INR) should ideally be controlled between 2.0 and 2.5, with a good time in therapeutic range (>70%, which may be difficult to achieve);
- (3) If a NOAC is used in combination with antiplatelet agents, the respective lower tested dose (dabigatran 110 mg twice a day, rivaroxaban 15 mg once a day, apixaban 2.5 mg twice a day) should be used;
- (4) New generation P2Y₁₂-inhibitors (prasugrel, ticagrelor) should not be used in antithrombotic combination therapy with anticoagulants before specific studies validate their role in combined therapy.

Figure 2, from the Consensus document,³ shows how to reach a final decision on the most appropriate antithrombotic treatment, as a

result of a multi-staged approach that considers stroke risk, bleeding risk, clinical setting (ACS or stable coronary artery disease) and type of intervention performed (using drug-eluting stent or bare-metal stent), with different potential choices according to needed intensity of antithrombotic therapy and time horizon (triple or dual therapy including oral anticoagulants, dual antiplatelet therapy, oral anticoagulants alone).³ Where VKA is used, good quality INR control is necessary, aiming for a time in therapeutic range >70%.^{11,12}

As the document reports, many areas of uncertainty remain and current recommendations are based on expert consensus and/or derived from extrapolation of data from patients in sinus rhythm, observational studies, subgroup analyses, and a few smaller controlled trials. This is particularly the case of the NOACs, for which there is growing interest but limited evidence available, until the completion of ongoing trials. This is, particularly, the case given the potential for increased gastrointestinal bleeds with some NOACs, probably accentuated when the NOAC is combined with an antiplatelet drug.¹³

The best therapeutic solution, considering the competing risks of ischaemic stroke, bleeding, recurrent coronary events, and stent thrombosis surely requires some degree of personalized management, which could substantially benefit from a team work among all the actors involved.^{5–7}

In these complex settings, it is quite important to have 'reality check' of what happens in 'real world' clinical practice. The Euro Observational Research Programme Atrial Fibrillation (EORP-AF) Pilot Registry, promoted by the European Society of Cardiology, offers the possibility to evaluate the full contemporary picture of AF patients across Europe and of antithrombotics use, according to current guidelines.² The EORP-Pilot phase collected information, on all patients presenting to cardiologists as in- or out-patients with an electrocardiogram documented diagnosis of AF in the year prior to enrolment, and 3119 patients were collected from February 2012 to March 2013. Among these patients, enrolled in nine ESC member Countries, a history of coronary artery disease was present in around 48% of patients, without significant regional differences.¹⁴ Coronary artery disease was associated with a significantly reduced use of OAC alone,¹⁵ lower prescription of NOACs and a significantly increased prescription of antiplatelet drugs alone or in combination with OAC.

According to these data, coming from 'real world' clinical practice, it is clear that coronary artery disease, in general, markedly affects prescription and management of antithrombotic treatment in AF patients, despite the potential for high bleeding.^{16,17} It is expected that when the natural history of coronary artery disease evolves to an acute phase, i.e. an ACS, with need for new treatments and PCIs, the difficulty of decision making in such a complex and challenging scenario will be magnified. For these reasons, we think that all the cardiologists and particularly the electrophysiologists taking care of AF patients will benefit from the availability of these updated, clinically oriented recommendations.³ In this evolving scenario growing interest is developing on NOACs, whose uptake in AF patients is increasing, but with need for more data on the specific setting of ACS, some trials are ongoing.³

As for all the medical or interventional treatments with high impact on practices, organization of care and costs, the implications and consequences of recommended strategies should be object of analysis

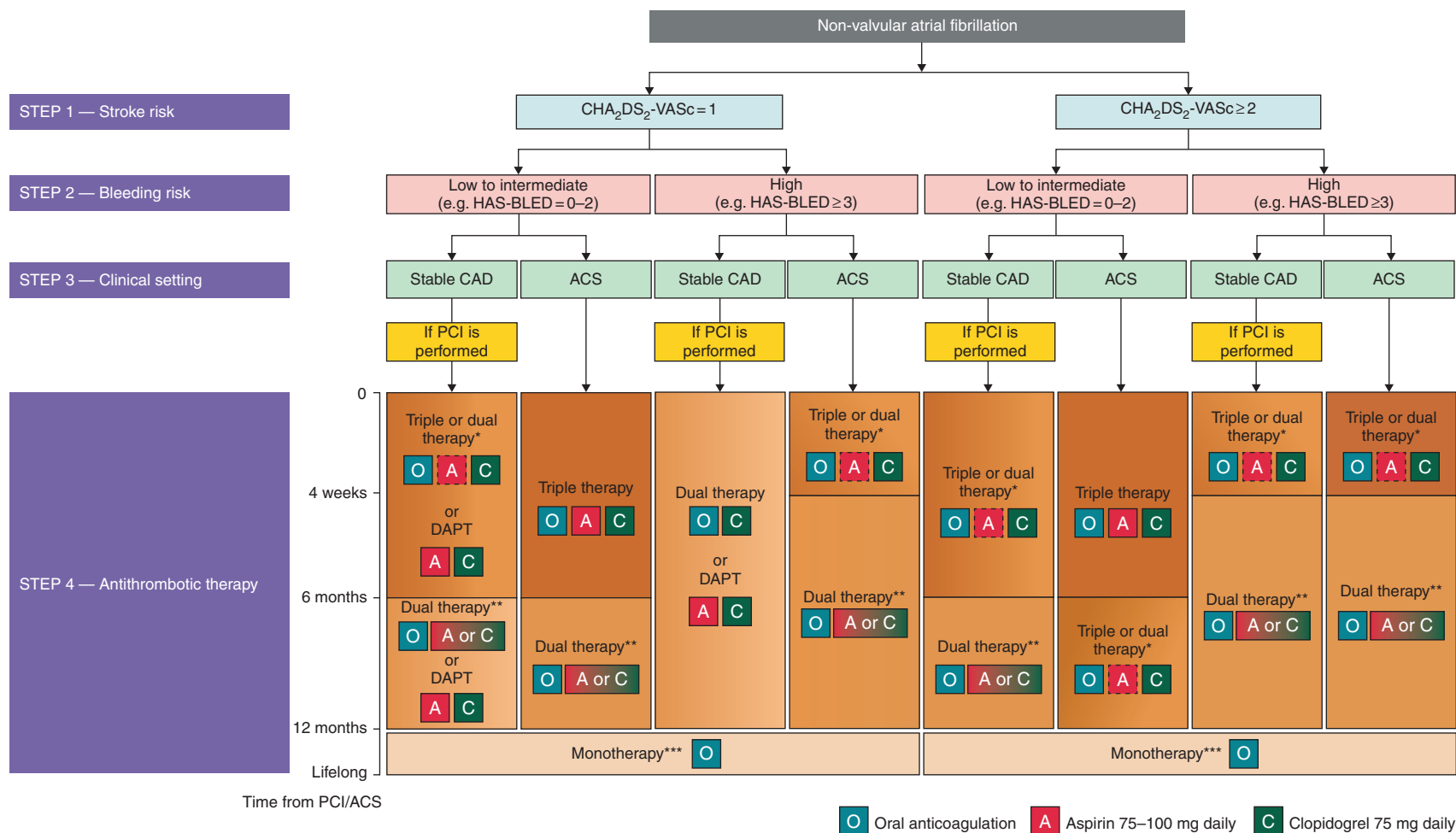


Figure 2 Choice of antithrombotic therapy, including combination strategies of oral anticoagulation (O), aspirin (A), and/or clopidogrel (C). For Step 4, background colour and gradients reflect the intensity of antithrombotic therapy (i.e. dark background colour = high intensity; light background colour = low intensity). Solid boxes represent recommended drugs. Dashed boxes represent optional drugs depending on clinical judgement. New generation drug-eluting stent is generally preferable over bare-metal stent, particularly in patients at low bleeding risk (HAS-BLED 0–2). When vitamin K antagonists are used as part of triple therapy, international normalized ratio should be targeted at 2.0–2.5 and the time in the therapeutic range should be >70%. *Dual therapy with oral anticoagulation and clopidogrel may be considered in selected patients. **Aspirin as an alternative to clopidogrel may be considered in patients on dual therapy (i.e. oral anticoagulation plus single antiplatelet). ***Dual therapy with oral anticoagulation and an antiplatelet agent (aspirin or clopidogrel) may be considered in patients at very high risk of coronary events. ACS, acute coronary syndromes; CAD, coronary artery disease; DAPT, dual antiplatelet therapy; PCI, percutaneous coronary intervention. Reproduced with permission from: Lip GY, et al.³

and re-evaluation, in accordance with the path of Health Technology Assessments.¹⁸ National and international registries or other targeted initiatives will be of help to give the appropriate feedback to clinicians, regulators and policy-makers.

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References

- Boriani G, Diemberger I, Biffi M, Martignani C. Balancing the risk of hemorrhage vs thromboembolism in patients with atrial fibrillation: how to navigate between Scylla and Charybdis? *Chest* 2010;**138**:1032–3.
- Camm AJ, Lip GY, De Caterina R, Savelieva I, Atar D, Hohnloser SH et al. 2012 focused update of the ESC Guidelines for the management of atrial fibrillation: an update of the 2010 ESC Guidelines for the management of atrial fibrillation. Developed with the special contribution of the European Heart Rhythm Association. *Europace* 2012;**14**:1385–413.
- Lip GY, Windecker S, Huber K, Kirchhof P, Marin F, Ten Berg JM et al. Management of antithrombotic therapy in atrial fibrillation patients presenting with acute coronary syndrome and/or undergoing percutaneous coronary or valve interventions: a joint consensus document of the European Society of Cardiology Working Group on Thrombosis, European Heart Rhythm Association (EHRA), European Association of Percutaneous Cardiovascular Interventions (EAPCI) and European Association of Acute Cardiac Care (ACCA) endorsed by the Heart Rhythm Society (HRS) and Asia-Pacific Heart Rhythm Society (APHRS). *Eur Heart J* 2014;**35**:3155–79.
- Gorennek B, Blomström Lundqvist C, Brugada Terradellas J, Camm AJ, Hindricks G, Huber K et al. Cardiac arrhythmias in acute coronary syndromes: position paper from the joint EHRA, ACCA, and EAPCI task force. *Europace* 2014;**16**:1655–73.
- Boriani G, Cervi E, Diemberger I, Martignani C, Biffi M. Clinical management of atrial fibrillation: need for a comprehensive patient-centered approach. *Chest* 2011;**140**: 843–5.
- Kirchhof P, Lip GY, Van Gelder IC, Bax J, Hylek E, Kaab S et al. Comprehensive risk reduction in patients with atrial fibrillation: emerging diagnostic and therapeutic options—a report from the 3rd Atrial Fibrillation Competence NETwork/European Heart Rhythm Association consensus conference. *Europace* 2012;**14**:8–27.
- Kirchhof P, Breithardt G, Aliot E, Al Khatib S, Apostolakis S, Auricchio A et al. Personalized management of atrial fibrillation: Proceedings from the fourth Atrial Fibrillation competence NETwork/European Heart Rhythm Association consensus conference. *Europace* 2013;**15**:1540–56.
- Boriani G. Predicting the quality of anticoagulation during warfarin therapy: the basis for an individualized approach. *Chest* 2013;**144**:1437–8.
- Apostolakis S, Sullivan RM, Olshansky B, Lip GY. Factors affecting quality of anticoagulation control among patients with atrial fibrillation on warfarin: the SAMe-TT2R2 score. *Chest* 2013;**144**:1555–63.
- Lip GY. Stroke and bleeding risk assessment in atrial fibrillation: when, how, and why? *Eur Heart J* 2013;**34**:1041–9.
- Gallego P, Roldan V, Marín F, Romera M, Valdés M, Vicente V et al. Cessation of oral anticoagulation in relation to mortality and the risk of thrombotic events in patients with atrial fibrillation. *Thromb Haemost* 2013;**110**:1189–98.
- De Caterina R, Husted S, Wallentin L, Andreotti F, Arnesen H, Bachmann F et al. Vitamin K antagonists in heart disease: current status and perspectives (Section III). Position paper of the ESC Working Group on Thrombosis—Task Force on Anticoagulants in Heart Disease. *Thromb Haemost* 2013;**110**:1087–107.
- Desai J, Kolb JM, Weitz JI, Aisenberg J. Gastrointestinal bleeding with the new oral anticoagulants—defining the issues and the management strategies. *Thromb Haemost* 2013;**110**:205–12.
- Lip GYH, Laroche C, Boriani G, Dan G-A, Santini M, Kalarus Z et al. Regional differences in presentation and treatment of patients with atrial fibrillation in Europe: a report from the EURObservational Research Programme Atrial Fibrillation (EORP-AF) Pilot General Registry. *Europace* 2015;**17**:194–206.
- Lip GY, Laroche C, Dan GA, Santini M, Kalarus Z, Rasmussen LH et al. 'Real-world' antithrombotic treatment in atrial fibrillation: The EORP-AF pilot survey. *Am J Med* 2014;**127**:519–29.e1.
- Azoulay L, Dell'Aniello S, Simon T, Renoux C, Suissa S. The concurrent use of antithrombotic therapies and the risk of bleeding in patients with atrial fibrillation. *Thromb Haemost* 2013;**109**:431–9.
- Bernard A, Fauchier L, Pellegrin C, Clementy N, Saint Etienne C, Banerjee A et al. Anticoagulation in patients with atrial fibrillation undergoing coronary stent implantation. *Thromb Haemost* 2013;**110**:560–8.
- Boriani G, Maniadakis N, Auricchio A, Müller-Riemenschneider F, Fattore G, Leyva F et al. Health technology assessment in interventional electrophysiology and device therapy: a position paper of the European Heart Rhythm Association. *Eur Heart J* 2013;**34**:1869–74.